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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/675,087	09/30/2003	Thomas S. Cohen	1849-US	4766

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Teradyne, Inc.
Legal Department
321 Harrison Avenue
Boston, MA 02118

EXAMINER

TSUKERMAN, LARISA Z

ART UNIT	PAPER NUMBER
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2833

DATE MAILED: 04/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<p align="center">Office Action Summary</p>	<p>Application No.</p> <p align="center">10/675,087</p>	<p>Applicant(s)</p> <p align="center">THOMAS S. COHEN</p>	
	<p>Examiner</p> <p align="center">Larisa Z Tsukerman</p>	<p>Art Unit</p> <p align="center">2833</p>	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☒ Claim(s) 6-9 and 13-14 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

The disclosure is objected to because of the following informalities: it is unclear as to what “**a first connector housing**” is actually referred to. Does Applicant imply “a first and second housing portions 22a and 22b of wafer 20”(Specification, page 6, lines 4 and 6) or something else?

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 16 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is unclear why the “shield strip” is a part of the first connector ground member because the specification discloses that the “shield strip” is a part of the second connector 110 (page 8, lines 3-8).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 - 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Preputnik et al. (5795191) in view of Embo et al. (5865645).

In regard to claim 1, Preputnik et al. disclose an assembly comprising:

the **first electrical connector 10** comprising a plurality of wafers 30, with each of the plurality of wafers including:

a first insulative housing 12/54;

a plurality of **first signal conductors 40**, with each first signal conductor having a **first contact end 52** connectable to a first printed circuit board 74, a **second contact end 46**, and an **intermediate portion 50** therebetween that is disposed in the first insulative housing 12/54;

a **shield plate 60**, the shield plate having a plurality of **first contact ends 62** connectable to the first printed circuit board 74, a plurality of **second contact ends 68**, and an **intermediate portion 66** therebetween that is disposed in the first insulative housing 12/54;

the **second electrical connector 80** having:

a **second insulative housing 82**, **ground conductors 86** and **second signal conductors 84** in a plurality of rows, with each of the plurality of rows comprising:

a **plurality of ground conductors 86** and **second signal conductors 84**, each second signal conductor **84** having a **first contact end** connectable to a second printed circuit board (not marked, see Fig. 8), a **second contact end** (not marked, see Fig. 8)

mateable to **the second contact end** of one of the **first signal conductors 46**, and an intermediate portion therebetween that is disposed in the base of the second insulative housing 82;

each ground conductor 86 having a **first contact end** connectable to the second printed circuit board (not shown and marked, see Fig. 8), **a second contact end** mateable to the **second contact end 62 of the shield plate 60**, and an **intermediate portion** (not marked, see Fig. 8) therebetween that is disposed in the base of the second insulative housing 82;

the first contact end of the second signal conductor 84 having a contact tail (not marked, see Fig. 8) and the second signal conductors 84 and the ground conductors 86 are positioned adjacent to one another so that for each second signal conductor 84 contact tail (not marked, see Fig. 8), there are ground conductor 86 contact tails adjacent either side of the second signal conductor 84 contact tail.

However, Preputnik et al. do not disclose **that** the first contact end of the ground conductor having at least **two contact tails**.

Embo et al. show a ground contact 10 comprising two contact tails 21.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify a first contact end of the ground conductor 86 in structure of Preputnik et al. by including two contact tails as taught by Embo et al. **in order to provide** better and stronger mechanical connection between the ground contact and supporting structure (PCB).

In regard to claim 2, Preputnik et al. disclose that a distance between a second signal conductor 84 contact tail (not marked, see Fig.8) and an adjacent ground conductor 86 contact tail of a row is less than a distance between adjacent rows (see Fig.1 and Col.).

In regard to claim 3, Preputnik et al. disclose that for each of the plurality of rows of the second electrical connector 80, the contact tails of the second signal conductors 84 and the ground conductors 86 are configured to align along a line when connected to the second printed circuit board (see Figs. 1 and 8).

Claims 4 - 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Preputnik et al. (5795191) in view of Billman (6435913).

Preputnik et al. disclose an assembly comprising:

the **first electrical connector** 10 comprising a plurality of wafers 30, with each of the plurality of wafers including:

a first insulative housing 12/54 (or **'body' of the wafer**) ???;

a plurality of **first signal conductors 40**, with each first signal conductor having a **first contact end** 52 connectable to a first printed circuit board 74, a **second contact end 46**, and an **intermediate portion** 50 therebetween that is disposed in the first insulative housing 12/54;

a **shield plate 60**, the shield plate having a plurality of **first contact ends 62** connectable to the first printed circuit board 74, a plurality of **second contact ends 68**, and an **intermediate portion** 66 therebetween that is disposed in the first insulative

housing 12/54;

the **second electrical connector 80** comprising:

a **second insulative housing 82** including side walls and a base (not marked, see Fig.1);

a plurality of **second signal conductors 84**, with each second signal conductor 84 having a **first contact end** connectable to a second printed circuit board (not marked, see Fig. 8), a **second contact end** (not marked, see Fig. 8) mateable to **the second contact end** of one of the **first signal conductors 46**, and an intermediate portion therebetween that is disposed in the base of the second insulative housing 82;

a **plurality of ground conductors 86**, with each ground conductor having a **first contact end** connectable to the second printed circuit board (not shown and marked, see Fig. 8), a **second contact end** mateable to the **second contact end 62 of the shield plate 60**, and an **intermediate portion** (not marked, see Fig. 8) therebetween that is disposed in the base of the second insulative housing 82;

the second signal conductors 84 and the ground conductors 86 are arranged in a plurality of **rows** (see Fig.1), with each row having second signal conductors 84 and ground conductors 86 (see Fig.8).

However, Preputnik et al. do not disclose **for each of the plurality of rows, there is a corresponding ground strip positioned adjacent thereto disposed in the base of the second insulative housing; and the ground strip is electrically connected to the ground conductors of the row.**

Billman (6435913) shows two sets of ground contacts 40 and 28 comprising of two corresponding ground strips 20 and 24 positioned adjacent to signal terminals 22 and disposed in the base 12 of an insulative housing 4, wherein the ground strip 24 is electrically connected to the ground conductors 28 of the row (see Col.3, lines 10 –11 and lines 18-22).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include an additional grounding strip of Billman in structure of Preputnik et al. in order to provide enhanced protection against cross talk between signal connections and provide improved shielding design without increasing the overall size of the second connector (header).

In regard to claim 5, Preputnik et al. in view of Billman disclose the ground strip 24 has a first surface FS (see Examiner Attachment) facing the corresponding ground conductors 86 of the row, and the first surface FS includes projections 40 that electrically connect to the corresponding ground conductors 86 of the row.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Preputnik et al. (5795191) in view of Billman (6435913), as applied to claim 4 above, and further in view of Embo et al (5865645).

Preputnik et al., when modified by Billman, disclose most of the claimed invention, except for the first contact end of each ground conductor 86 comprises at least two contact tails.

Embo et al. show a ground contact 10 comprising two contact tails 21.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a first contact end of the ground conductor 86 in structure of Preputnik et al. by including two contact tails as taught by Embo et al. **in order to provide** better and stronger mechanical connection between the ground contact and supporting structure (PCB).

Claims 11, 12, 15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Preputnik et al. (5795191) in view of Van Woensel (6299484).

In regard to claim 11, Preputnik et al. discloses an electrical connector assembly having a first electrical connector mateable to a second electrical connector, the electrical connector assembly comprising:

the first electrical connector 10 comprising a plurality of wafers 30, with each of the plurality of wafers including:

a first insulative housing 12/54;

a plurality **of first signal conductors 40**, with each **first signal conductor** having a **first contact end** 52 connectable to a first printed circuit board 74, a **second contact end 46**, and an **intermediate portion** 50 therebetween that is disposed in the first insulative housing 12/54;

at least one **ground member 60**, the **ground member** having at least one **first contact end** 62 connectable to the first printed circuit board 74, at least **one second contact end 68**, and an intermediate portion 66 therebetween that is disposed in **the first insulative housing 12/54;**

the second electrical connector 80 having an insulative housing 82, ground conductors 86 and second signal conductors 84 in a plurality of rows, with each of the plurality of rows comprising:

a plurality of ground 86 and signal second conductors 84;

each second signal conductor 84 having a **first contact end** (not marked, see Fig.8) connectable to a second printed circuit board, a **second contact end** (not marked, see Fig. 8) mateable to **the second contact end** 46 of one of the first signal conductors 40, and an intermediate portion 50 therebetween that is disposed in the second insulative housing 12/54;

each ground conductor 86 having a first contact end connectable to the second printed circuit board (not shown and marked), a second contact end mateable to the second contact end 62 of the ground member 60, and an intermediate portion (not marked, see Fig.8) therebetween that is disposed in the second insulative housing 82;

the first contact end of the second signal conductor 84 having a contact tail (not marked, see Fig.8) and the first contact end of the **ground conductor** 86 having at least one contact tail (not marked, see Fig.8);

the second signal conductors 84 and **the ground conductors** 86 are positioned adjacent to one another so that for each second signal conductor contact tail, there are ground conductor contact tails adjacent either side of the second signal conductor contact tail.

However, Preputnik et al. do not disclose that the first insulative housing providing an area, which **exposes** a portion of the intermediate portion of the **ground member** and

attached a **conductive member** to the plurality of wafers and electrically connecting to each **ground member** at **the exposed** intermediate portion of the **ground member**.

Van Woensel teaches a first insulative housing 3/5 providing an area 21 which exposes a portion of the intermediate portion of the ground member 7 and a conductive member 24 attached to the plurality of wafers (modules), the conductive member 24 electrically connecting to each ground member 7 at the exposed intermediate portion 21 of the ground member 7 in order advantageously to create a **second grounding path**, to prevent EMI effect, noise and spurious signals.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made and for the same reason to include a **conductive member** (second grounding path) in structure of Preputnik et al. as taught by Van Woensel.

In regard to claim 12, Preputnik et al. disclose that the ground member 60 comprises a shield plate (see Fig. 4).

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Preputnik et al. (5795191) in view of Van Woensel (6299484), as applied to claim 11 above, and further in view of Embo et al (5865645).

Preputnik et al. disclose most of the claimed invention except for the second contact end 68 of the ground member 60 comprises **opposing contacting members**.

Embo et al. show a ground contact 10 comprising **opposing contacting members** 21.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a first contact end of the ground conductor 86

in structure of Preputnik et al. by including **opposing contacting members** as taught by Embo et al. **in order to provide** better and stronger mechanical connection between the ground contact and supporting structure (PCB).

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Preputnik et al. (5795191) in view of Van Woensel (6299484) and further in view of Embo et al (5865645).

Preputnik et al. discloses an electrical connector assembly having a first electrical connector mateable to a second electrical connector, the electrical connector assembly comprising:

the first electrical connector 10 comprising a plurality of wafers 30, with each of the plurality of wafers including:

a first insulative housing 12/54;

a plurality of **first signal conductors 40**, with each **first signal conductor** having a **first contact end 52** connectable to a first printed circuit board 74, a **second contact end 46**, and an **intermediate portion 50** therebetween that is disposed in the first insulative housing 12/54;

at least one **ground member 60**, the **ground member** having at least one **first contact end 62** connectable to the first printed circuit board 74, at least **one second contact end 68**, and an intermediate portion 66 therebetween that is disposed in **the first insulative housing 12/54;**

the second electrical connector 80 having an insulative housing 82, ground conductors 86 and second signal conductors 84 in a plurality of rows, with each of the plurality of rows comprising:

a plurality of ground 86 and signal second conductors 84;

each second signal conductor 84 having a **first contact end** (not marked, see Fig.8) connectable to a second printed circuit board, a **second contact end** (not marked, see Fig. 8) mateable to **the second contact end** 46 of one of the first signal conductors 40, and an intermediate portion 50 therebetween that is disposed in the second insulative housing 12/54;

each ground conductor 86 having a first contact end connectable to the second printed circuit board (not shown and marked), a second contact end mateable to the second contact end 62 of the ground member 60, and an intermediate portion (not marked, see Fig.8) therebetween that is disposed in the second insulative housing 82;

the first contact end of the second signal conductor 84 having a contact tail (not marked, see Fig.8) and the first contact end of the **ground conductor** 86 having a **contact tail** (not marked, see Fig.8);

the second signal conductors 84 and **the ground conductors** 86 are positioned adjacent to one another so that for each second signal conductor contact tail, there are ground conductor contact tails adjacent either side of the second signal conductor contact tail.

However, Preputnik et al. do not disclose the following limitations:

(1) that the first insulative housing providing an area, which **exposes** a portion of the intermediate portion of the **ground member** and attached **a conductive member** to the plurality of wafers and electrically connecting to each **ground member** at the **exposed** intermediate portion of the **ground member**; and

(2) that the first contact end of the ground conductor having at least **two contact tails**.

In regard to limitation (1), Van Woensel teaches a first insulative housing 3/5 providing an area 21 which exposes a portion of the intermediate portion of the ground member 7 and a conductive member 24 attached to the plurality of wafers (modules), the conductive member 24 electrically connecting to each ground member 7 at the exposed intermediate portion 21 of the ground member 7 in order advantageously to create a **second grounding path**, to prevent EMI effect, noise and spurious signals.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made and for the same reason to include **a conductive member** (second grounding path) in structure of Preputnik et al. as taught by Van Woensel.

Further, in regard to limitation(2), Embo et al. show a ground contact 10 comprising two contact tails 21.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify a first contact end of the ground conductor 86 in structure of Preputnik et al. by including two contact tails as taught by Embo et al.

in order to provide better and stronger mechanical connection between the ground contact and supporting structure (PCB).

Allowable Subject Matter

Claim 19 is allowed.

The following is an examiner's statement of reasons for allowance:

The prior art of record does not teach or suggests: **a conductive stiffener attached to the plurality of wafers and electrically connecting to each ground member (shield plate) at the tab member.**

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Claims 6 – 9 and 13 – 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

In regard to claims 6 and 13,

The following is a statement of reasons for the indication of allowable subject matter:

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for the second electrical connector, **the ground strip** has a first end and a second end, the first end and the second end **being bent** in the direction of the corresponding row of second signal conductors and ground conductors, and the first end of the ground strip extending beyond an end of the row and the second end of the ground strip extending beyond the other end of the row.

Conclusion


The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Larisa Z Tsukerman whose telephone number is (571)-272-2015. The examiner can normally be reached on Monday through Friday from 8:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paula A Bradley can be reached on (571)-272-2800 ex. 33. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)-308-0956.

L.T.
April 15, 2004


THO D. TA
PRIMARY EXAMINER